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The Leskeaceae are divided into five subfamilies; the *Heterocladieae*, *Thelieae*, *Anomodonteae*, *Leskeae* and *Thuidieae*. *Heterocladium* has five North American species; *H. procurrens*, *H. squarrosulum*, *H. heteropterum*, *H. Macounii* and *H. heteropteroides*. *Thelia* four; *Th. hirtella*, *Th. compacta*, *Th. robusta*, and *Th. asprella*, *Th. Lescurii* being reduced to the latter. *Myurella* three species; *M. julacea*, *M. tenerima* and *M. gracillis*.

*Anomodon*, as given by Lesqx. and James, is divided into three genera with *Haplohymenium* Doz. and Mol. to include *H. triste* (Cesat.) Kindb. and *Anomodon* with five species; *A. apiculatus*, *A. minor*, *A. viticulosus*, *A. attenuatus* and *A. rostratus* and *Herpetineuron Toccoae* (Sull.) Cardot.

The *Leskeae* include *Lindbergia* with *L. brachyptera* and *L. Austini* (Sull.) Broth. *Leskea* has four species; *L. microcarpa*, *L. polycarpa*, *L. arenicola*, *L. gracilescens*. *Leskea nervosa* is transferred to *Leskeella* Limpr. and *L. tectorum* to *Pseudoleskeella*. *Lescurea* takes one species, *L. substriata*. *Pseudoleskea* has five species; *P. atrovirens*, *P. pallida*, *P. denudata*, and the variety *Holzingeri*, *P. rigescens* and *P. stenophylla*.

The *Thuidieae* are also subdivided more than usual, the genus *Rauia* Aust. being recognized for *R. scita*. *Thuidium erectum* has been overlooked as it was reduced to a synonym of *Th. delicatum* by Dr. Best in 1896. The genus *Haplocladium* C.M. is also maintained with two species, *H. virginianum* and *H. microphyllum* (Sw.) Broth. This part concludes with the generic description of *Cladpodium* and figure of *C. leuconcuron*.

New York Botanical Garden.

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## A LIST OF MOSSES COLLECTED IN THE MOUNTAINS OF WESTERN NORTH CAROLINA IN THE SUMMER OF 1907.

BY A. J. GROUT, PH.D.

All the mosses here listed were collected during July and the first two weeks in August. They were all collected in or near the estate of Geo. W. Vanderbilt, and mostly in Transylvania County, though some collected on and near Green Knob and Pigeon Gap were in Haywood Co. Chestnut Bald is the highest of the group of what is generally called "The Balsams," because the summits are covered with balsam fir and spruce. Probably some of the collections made here were over the line in Jackson County. All collections from Chestnut Bald were at about 6000 ft. altitude.

The Pink Beds, which were headquarters, is an elevated mountain valley about 3300 ft. above sea level on the average and about 12 miles northwest of Brevard and about 40 miles from Asheville. The life of these mountains, both animal and vegetable, is an interesting combination of northern and southern forms. Many forms found here which were originally identified with northern forms have proved on closer study to be well marked varieties or even distinct species. Many of the mosses listed here differ considerably from northern forms and are probably good varieties to say the least. The thirteenth fascicle (Nos. 301-325) of my "North American Musci

*Pleurocarpi*" is almost exclusively composed of specimens from this region and contains many of these interesting aberrant forms.

Undoubtedly some of the common mosses were omitted from my collections and from the list, as the collection of the commonest things was apt to be put off until some more convenient time. Fruiting *Polytrichum commune* was faithfully sought for but was not encountered and all sterile specimens collected proved to be something else. The abundant rains and moist climate of this region make it an excellent locality for mosses and the number of these plants is almost equal to that in our northern mountains, but it seemed to me that the number of species was far less.

In a given locality the soil for many rods would appear covered with mosses but on investigation there seemed to be far less variety than in a similar area in the north.

My visit to this region was made possible and comfortable through the kindness of Dr. Clifton D. Howe, Assistant Director of the Biltmore School of Forestry, which holds its summer sessions in the Pink Beds.

I found the climate in the region delightful except for the almost daily thunder shower, but the extent of my collections was materially lessened by lack of strength to undergo any very strenuous trips into the numerous wild and attractive regions beyond easy access.

*SPHAGNUM DILL.* Peat bogs are rare in this region but in the bottom of the Pink Beds valley there were bogs containing three or four species, which unfortunately were not collected.

*ANDREAEA CRASSINERVIA* Bruch, cfr. Bare cliffs, summit of Chestnut Bald.

" *Rothii*, W. & M. With the last. Possibly the entire collection is this species.

*GEORGIA PELLUCIDA* (L.) Rabenh. Common.

*CATHARINEA ANGUSTATA* Brid. Common.

" *UNDULATA* (L.) W. & M. Collected only once at the summit of Chestnut Bald and apparently infrequent.

*POGONATUM BREVICAULE* (Brid.) Beauv. Pink Beds. No specimens preserved.

*POLYTRICHUM OHIOENSE* R. & C. Common everywhere in the region.

" *GRACILE* Dicks. Summit of Chestnut Bald.

*WEBERA SESSILIS* (Schmid.) Lindb. Common.

*FISSIDENS ADIANTIODES* (L.) Hedw. Collected in the Pink Beds.

" *CRISTATUS* Wils. Frequent.

" *SUBBASILARIS* Hedw. Very common on bark of trees.

*LEUCOBRYUM GLAUCUM* (L.) Schimp. Collected in the Pink Beds. No specimens preserved.

*CAMPYLOPUS INTROFLEXUS* (Hedw.) Brid. On bare cliffs, summit of Chestnut Bald.

" *VIRGINICUS* (Aust.) L. & J. Same as the last but in more moist situations.

*CAMPYLOSTELIUM SAXICOLA* (Web. & Mohr.) B. & S. On stone, Pink Beds.

*CERATODON PURPUREUS* (L.) Brid. No specimen preserved.

*DICRANELLA HETEROMALLA* (L.) Schimp. Frequent. On the mountain summits the form with strongly recurved setae described by Mrs. Britton in Bulletin Torr. Bot. Club. Nov. 1895, is common.

*DICRANUM BONJEANI* DeNot. Edges of cliffs, Chestnut Bald. Back of leaf with serrate lamellae.

*DICRANUM FLAGELLARE* Hedw. Common.

“ *FULVUM* Hook. Common.

“ *FUSCESCENS* Turn. On rotten wood, summit of Chestnut Bald.

“ *LONGIFOLIUM* Ehrh. Common on the higher peaks.

“ *SCOPARIUM* (L.) Hedw. Common.

*DITRICHUM TORTILE* var. *VAGINANS* (Sulliv.) Grout. A peculiar form having denticulate leaves with margins strongly but narrowly revolute, somewhat curved capsules, very large double annulus and nearly smooth peristome teeth. Spores maturing in early autumn. Pink Beds.

*ONCOPHORUS WALENBERGH* Brid. Pink Beds.

*RHABDOWEISIA DENTICULATA* (Brid.) B. & S. Near Green Knob, alt. 5000 ft.

*GRIMMIA APOCARPA* (L.) Hedw. Pink Beds. No specimen preserved.

“ *PENNSYLVANICA* Schwaegr. Frequent.

*HEDWIGIA ALBICANS* (Web.) Lindb. Common.

*PTYCOMITRIUM INCURVUM* (Schwaegr.) Sulliv. Pigeon Gap.

*GYMNOSTOMUM CURVIROSTRE* (Ehrh.) Hedw. Cliffs, summit of Chestnut Bald.

*TORTELLA CAESPITOSA* (Schwaegr.) Limpr. Common at base of trees.

*TRICHOSTOMUM CYLINDRICUM* (Bruch.) Lindb. Abundant at summit of Chestnut Bald.

*WEISIA VIRIDULA* (L.) Hedw. Green Knob, alt. 5000 ft.

*DRUMMONDIA CLAVELLATA* Hook. Pigeon Gap.

*ULOTA AMERICANA* (Beauv.) Lindb. Common.

“ *CRISPA* Brid. Chestnut Bald.

“ “ var. *CRISPULA* (Bruch.) Hammar. Pink Beds.

“ *LUDWIGH* Brid. Pink Beds.

*ZYGODON CONOIDEUS* (Dicks.) Hook. With the next. Determination somewhat doubtful.

“ *EXCELSUS* (Sulliv.) E. G. B. Very common on bark of small trees, Chestnut Bald.

“ *GRACILIS* Wils. Very abundant on ledges, summit of Chestnut Bald. Determination doubtful.

*FUNARIA HYGROMETRICA* (L.) Sibth. Common.

*AULACOMNIUM HETEROSTICHUM* (Hedw.) B. & S. Memory says common in Pink Beds but no other record.

“ *PALUSTRE* Schwaegr. Much less common than in the north. Pink Beds.

*BARTRAMIA OEDERI* (Gunn.) Schwartz. Pink Beds.

“ *POMIFORMIS* (L.) Hedw. Common.

- PHILONOTIS FONTANA Brid. Pink Beds. A form collected around a cool spring under overhanging rocks agrees very closely with descriptions of var. *ampliretis* Dixon.
- BRYUM ARGENTEUM L. Common in its usual habitats.
- “ BIMUM Schreb. Pink Beds.
- “ CAPILLARE L. Pigeon Gap, alt. 4500 ft.
- MNIUM AFFINE var. RUGICUM B. & S. Moist rocks. Pink Beds.
- “ “ “ CILIARE (Grev.) C. M. Common.
- “ CUSPIDATUM (L.) Leyss. Pink Beds.
- “ HORNUM L. Frequent.
- “ PUNCTATUM L. Pink Beds.
- “ “ var. ELATUM Schimp. Pink Beds.
- “ ROSTRATUM Schrad. Pink Beds.
- POHLIA ELONGATA Hedw. Common in woods along the mountain summits.
- “ NUTANS (Schreb.) Lindb. Common. Specimens from Chestnut Bald had the terminal leaves infolded into a body appearing like a cleistocarpous capsule but which proved to be filled with minute round worms. See article this issue by H. N. Dixon.
- RHODOBRYUM ROSEUM (Weis.) Limpr. Common.
- ANOMODON APICULATUS B. & S. Pink Beds.
- “ ATTENUATUS (Schreb.) Huebn. Common.
- “ ROSTRATUS (Hedw.) Schimp. Common.
- “ TRISTIS (Cesat.) Sulliv. Pink Beds.
- LESKEA DENTICULATA Sulliv. Crevices of moist ledges, Pigeon Gap, alt. 4500 ft.
- THUIDIUM DELICATULUM (L.) Mitt. Very common.
- “ MICROPHYLLUM (Sw.) Best. Near Green Knob, alt. 5000 ft.
- “ RECOGNITUM (Hedw.) Lindb. Pink Beds.
- “ SCITUM (Beauv.) Aust. Pink Beds.
- “ VIRGINIANUM (Brid.) Lindb. Common.
- AMBLYSTEGIUM ADNATUM (Hedw.) J. & S. On rocks near Green Knob, alt. 5000 ft.
- “ IRRIGUUM (Hook. & Wils.) B. & S. Pink Beds.
- “ LESCURI (Sulliv.) Aust. Common in brooks.
- “ VARIUM (Hedw.) Lindb. forma. Base of trees. Pink Beds.
- BRACHYTHECIUM ACUMINATUM (Hedw.) Kindb. Common on trees. Pink Beds.
- “ CYRTOPHYLLUM Kindb. On trees. Pink Beds.
- “ DIGASTRUM Kindb. On moist rocks, Green Knob, alt. 5000 ft.
- “ OXYCLADON (Brid.) J. & S. Frequent on moist soil and rocks.
- “ OXYCLADON DENTATUM (L. & J.) Grout. On moist rocks near Green Knob, alt. 5000 ft. This var. here plainly merged into forms indistinguishable from *B. digastrum*.

BRACHYTHECIUM OXYCLADON var.? On the bark of trees at the summit of Chestnut Bald with *Neckera pennata* and *Pylaisia velutina* grows a very slender form of this species unlike anything I have ever seen elsewhere.

“ PLUMOSUM (Sw.) B. & S. Frequent.

“ RIVULARE B. & S. Common.

“ SALEBROSUM (Hoffm.) B. & S. Pink Beds.

BRYHINIA NOVAE-ANGLIAE (Sulliv. & Lesq.) Grout. Pink Beds, Chestnut Bald. Rather more slender than the usual northern form.

“ “ **fontinalis** var. nov. Very slender and attenuate with leaves distant. (N. Am. Musci Pleurocarpi, No. 315). Around cool spring under overhanging rocks Pink Beds, alt. 3500 ft.

CAMPYLUM CHRYSOPHYLLUM (Brid.) Bryhn. Common but varying greatly, and with forms unlike any northern plant I am familiar with.

The most typical plant was from the summit of Chestnut Bald. The form most unlike anything else I have seen was fairly common on moist soil in the Pink Beds, and I have called it.

CAMPYLUM CHRYSOPHYLLUM **Carolinianum** var. nov. Very robust; leaves more gradually and less slenderly acuminate, often serrulate to apex.

CAMPYLUM HISPIDULUM (Brid.) Mitten. Pink Beds.

ENTODON BREVISETUS (Hook. & Wils.) J. & S. Frequent.

“ CLADORRHIZANS (Hedw.) C. M. Pink Beds.

“ SULLIVANTH C. M. Frequent on rocks in woods. Pink Beds.

EURHYNCHIMUM HIANIS (Hedw.) J. & S. Pink Beds.

“ RUSCIFORME (Neck.) Milde. Pink Beds.

“ SERRULATUM (Hedw.) Kindb. Frequent.

HOMALOTHECIELLA SUBCAPILLATA (Hedw.) Cardot. Pink Beds, Chestnut Bald.

HYLOCOMIUM BREVIROSTRE (Ehrh.) B. & S. Near Green Knob, alt. 5000 ft.

“ PROLIFERUM (L.) Lindb. Abundant on the summit of Chestnut Bald.

“ TRIQUETRUM (L.) B. & S. Summit of Chestnut Bald.

“ PROLIFERUM (L.) Lindb. Exceedingly abundant on the summit of Chestnut Bald.

“ TRIQUETRUM (L.) B. & S. Chestnut Bald.

HYPNUM ADUNCUM Hedw. (Group typicum) var. **PSEUDOSENDTNERI** Ren.\* forma MINUTA. Det. Renauld. “A curious form evidently accidental or abnormal.” M. Renauld adds that the costa

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\*I am not certain from M. Renauld's letter whether this variety has been published before or not.

is too short for *H. Sendtneri* to which I had referred it and which it resembles in the structure of its alar cells. I am of the opinion that this is not an infrequent form in the region. Growing on moist soil by roadside. Pink Beds. The only *Harpidium* I could find in the region.

- HYPNUM CRISTA-CASTRENSIS** L. Abundant on Chestnut Bald.  
“ **CURVIFOLIUM** Hedw. Common but with very long setae.  
“ **EUGYRIUM** B. & S. approaching var. *Mackayi* Schimp. Pink Beds.  
“ **IMPONENS** Hedw. Exceedingly common on rotten wood.  
“ **MOLLUSCUM** Hedw. Pink Beds.  
“ **NEMOROSUM** Koch. Chestnut Bald.  
“ **PALLESCENS** (Hedw.) B. & S. Chestnut Bald.  
“ **REPTILE** Mx. Pink Beds, Chestnut Bald.  
**PLAGIOTHECIUM DENTICULATUM** (L.) B. & S. Common.  
“ **ELEGANS** (Hook.) Sulliv. Bed of rivulet, Chestnut Bald.  
“ **MUELLERIANUM** Sch. Frequent and often growing at base of trees.  
“ **STRIATELLUM** (Huds.) B. & S. A very robust form with leaves 2 mm. long was found in moist crevices of rock near Green Knob, alt. 5000 ft.  
**PTATYGYRIUM REPENS** (Brid.) B. & S. Pink Beds.  
**PYLAISIA INTRICATA** (Hedw.) Cardot. (*P. velutina* B. & S.). Common on trees, Chestnut Bald.  
“ **SCHIMPERI** Cardot. Common.  
“ **SUBDENTICULATA** Schimp. On bark of trees, Pink Beds, Chestnut Bald.  
**RAPHIDOSTEGIUM CAROLINIANUM** (C.M.) J. & S. Bare cliffs, Chestnut Bald.  
“ **CYLINDRICARPUM** (C. M.) J. & S. Bark of tree in swamp, Pink Beds.  
“ **DELICATULUM** (James) Paris. On rotten wood, summit of Chestnut Bald.  
“ **MARYLANDICUM** (C. M.) J. & S. Wet rocks by brook, Pink Beds.  
“ **NOVAE-CESAREAE** (Aust.) R. & C. On moist rocks near brook, Pink Beds.  
“ **RECURVANS** (Mx.) B. & S. Common. On Chestnut Bald were some exceedingly interesting forms that merit more careful study than I have yet been able to give.  
**ANACAMPTODON SPLACHNOIDES** (Froelich.) Brid. On decaying spot on upper side of horizontal oak limb, Pigeon Gap, alt. 4500 ft.  
**HOOKEERIA SULLIVANTH** C. M. Common along the banks of brooks close to the water.  
**NECKERA PENNATA** (L.) Hedw. Summit of Chestnut Bald.  
**LEPTODON TRICHOMITRION** (Hedw.) Mohr. Common.  
**LEUCODON BRACHYPUS** Brid. Very common.  
**FONTINALIS DALECARLICA** B. & S. Pink Beds.  
“ **NOVAE-ANGLIAE** Sulliv. Pink Beds.  
Boys' High School, Brooklyn, N. Y.